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ABSTRACT

This analysis is part of an effort to develop a method of showing accountability for the educational responsibilities of the school system to the children of Atlanta, Ga. Forrest Elementary School serves a low-income community and receives ESEA Title I aid. Faculty planned to look at the effectiveness of its program in raising the reading levels of pupils in grades K-3, since it was noted that many of the students were reading below their assigned grade levels. With the initiation of the Peabody Rebus Reading Approach in the first grade, it was decided to study only the progress of the first grade pupils. The experimental approaches used were a basal reading approach using traditional orthography (BR-TO) and a basal reading approach using rebuses (BR-Rebus). The Metropolitan Readiness Tests, the Metropolitan Achievement Tests, and the Student Attitude Toward School Inventory were used as evaluative instruments. Findings indicated that the BR-Rebus method was not superior to the BR-TO method on both pretest and posttest; that first grade pupils had a positive attitude toward school; and, that attendance did not affect achievement. (Authors/RJ)

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R E S E A R C H A N D D E V E L O P M E N T R E P O R T

Vol. V, No. 7 December, 1971

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1970--71

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PREFACE

An analysis has been made of certain performances of pupils at Forrest Elementary School. Some of the results are reported in this publication and reflect the cooperation of the administration and faculty of the school and the staff members of the Research and Development Division.

This analysis is part of an effort to develop a method of showing accountability for the educational responsibilities of the school system to the children of Atlanta. The data contained in this developmental endeavor should not be used or quoted out of context. The report is primarily for the use of the individual school and other school personnel who have an influence on improving the effectiveness of the instructional program. It provides data which show trends and which can be used for the purpose of making further examinations for promoting pupil progress.

Jarvis Barnes
Assistant Superintendent
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I. RATIONALE

Forrest Elementary School serves a low-income community and is, therefore, classified as a Title I School and receives the compensatory services provided by Title I. This year, its faculty, with the assistance of a research assistant, planned to look at the effectiveness of its program in raising the reading levels of pupils in grades K - 3.

It was noted by the faculty that many of the pupils at Forrest were reading below their assigned grade levels. Inasmuch as the development of reading skills is begun in the primary grades, special emphases were placed on improvement of instruction in these grades as a spin-off point.

During the beginning of the school year, Forrest was selected to supplement the Basal Reading approach with Rebus in the first grade. Only 25 pupils of the total first grade population were selected for this program. Therefore, it was decided to compare the Basal Reader approach using BR-Rebus and the Basal Reader approach using traditional orthography (BR-TO), which was used to teach reading to the other first graders.

Progress of these pupils will be evaluated each year during their enrollment at Forrest; thus the longitudinal aspect of the program can be studied.

During the 1970-71 school year there was a tremendous increase in the rate of migration in or out of the school community. The mobility index for Forrest during the 1968-69 school year was 0.19, which indicates approximately one-fifth of the total active enrollment migrated in or out. The mobility index for the 1969-70 school year was 0.16, which indicates a decrease in rate of migration. However, the 1970-71 index, which was 0.52, indicates a tremendous increase in the rate of mobility. This increase was caused by the opening of Walden Middle School. All sixth and seventh grade pupils were transferred to the middle school in March, 1971.

Supporting Services

Through the provisions of the regular budget of the Atlanta Public School System and through federal assistance and community services, the following resources contributed to the instructional program at Forrest:

A. Comprehensive Instructional Program (CIP)

The purposes of this program are to insure growth in reading for each pupil through diagnostic teaching and inservice training for teachers, and to establish a minimum professional floor for teachers. During the first year of implementation, 1970-71, the program concentrated in grades 1 - 3 in reading. Inservice training was provided for teachers following the identification of problems by principals, coordinators, resource people, and teachers using the Georgia Education Model (GEM) evaluation instruments. This project did not specify the reading program to be followed in any school. However, each school was to implement a comprehensive reading program which would provide for continuous sequential development of word attack and comprehension skills. Accordingly, Forrest used the Scott-Foresman basal reader series.

Inservice activities were designed to insure gain for each pupil through diagnostic teaching and training for teachers. Initially, the principal and the lead teacher participated in a two-weeks workshop in June, 1970. This workshop provided specific experiences to acquaint the participants with what constitutes a reading program. Further, they were charged with the responsibility of going back to their respective schools and, with the help and cooperation of the total faculty and the reading monitor or coordinator, developing a reading program which would meet the needs of their pupils.

Forrest did not have the services of a reading coordinator. Therefore, the principal and the lead teacher, during pre-

planning week in August, 1971, shared with the faculty the experiences of the summer workshop.

During the school year, nine teachers were involved in 40 hours of inservice training provided by CIP through the University of Georgia.

B. Title I Program

Inasmuch as 27.5 per cent of the pupils enrolled in Forrest were from families whose incomes were $2,000 or less, it qualified as a Title I School. As such, it received the following compensatory services and personnel provided by ESEA Title I:

1. Lead Teacher -- The lead teacher served as a curriculum specialist. As such, she did demonstration teaching, collected and distributed materials, and assisted teachers in diagnosing and prescribing for learning.

2. Counselor -- The counselor administered and interpreted tests, counseled with children who had reading difficulties and presented behavior problems, worked with attendance problems, and made referrals for psychological services.

   Upon request of teachers on all grade levels, the counselor sought to help pupils with personal and social problems through individual sessions with each pupil, conferences with parents, and conferences with pupil, teacher, and/or parents. This person worked full time at Forrest.

3. Social Worker -- The services of the social worker were available to Forrest approximately one-half day per week to work with special attendance problems.

4. Educational Aides -- Title I aides were assigned on the basis of enrollment. Four aides were assigned to Forrest.

They worked with small groups and did individual instruction, assisted teachers in planning and in preparing materials, supervised pupils working on special activities, read and told stories to children, operated audio-visual equipment, supervised pupils during play periods and other activities, and counseled pupils with special problems.

Two of the four aides were participants in the Career Opportunities Program (COP). COP is a training program wherein its participants were enrolled in accredited college courses leading toward professional certification. The COP participants were involved in instructional tasks so as to reduce the teacher-pupil ratio; thereby providing more opportunities for pupils to relate to an adult in the classroom. These two aides were assigned to work with five teachers. One participant worked with the two first grade teachers, helping one teacher in the morning and the other in the afternoon. The other COP participant worked with three third grade teachers. The other two Title I aides were assigned, one to the kindergarten classes and the other to the second grade classes. No aides were assigned to grades four and five.

II. NEEDS OF PUPILS

The needs of the pupils were identified as both personal and instructional in nature. The following are considered characteristic:

A. To develop a more positive attitude toward school.

B. To experience success in performing assigned tasks, particularly in reading.

C. To lengthen their attention span.

D. To receive encouragement and immediate reinforcement.

E. To learn to follow directions.

F. To develop skills in self-expression and verbal communication.

G. To develop self-respect and respect for the rights of others.

H. To develop imagination.

I. To improve relationships with adults.

J. To develop a feeling of belonging and security.

K. To develop skills in group interaction and socialization.

L. To develop self-direction and skill in performing independent actions.

III. GOALS OF THE PROGRAM

The following goals were selected on the basis of the previously stated identified needs. These goals are:

A. To provide an atmosphere wherein pupils are free to express themselves, think creatively, and develop appreciation for the aesthetics.

B. To provide instructional opportunities in which pupils are able to acquire mastery of identified information and skills.

C. To provide opportunities in which pupils can receive immediate reward for, or assistance in, completing a task.

D. To provide learning experiences geared to the needs and capabilities of individual pupils.

E. To provide pupils with experiences of success so that they will think of school as being a "fun place" and thus like it better.

F. To provide opportunities for pupils to participate in group situations so that they might develop an understanding of how to contribute to group efforts.

IV. OBJECTIVES

The following objectives served as guides for the activities of the program and as the basis for evaluating the performance of the pupils:

A. All first grade pupils who scored C or above on the Metropolitan Readiness Tests (MRT) will score 1.6 or above on the posttest, the Metropolitan Achievement Tests (MAT).

B. Pupils in the second and third grades will make a one month gain for each month between pretest and posttest, as measured by the MAT.

C. The attitude toward school of pupils in the Rebus Program will be more positive than the attitude of pupils not in the program, statistically significant at the .05 level.

D. Each pupil will participate in group activities as the listener or speaker, giving proper respect to the rights of others.

E. Given specific assignments or tasks, pupils will perform these independently without disturbing others.

The following objectives are specifically related to COP:

A. Pupils taught by COP teams will make a gain of more than one grade level annually.

B. Pupils taught by COP teams will make a significantly greater annual gain in reading than similar pupils taught in self-contained classrooms.

C. The low-income schools will achieve, after one year of operation, significantly more open climates than will non-COP schools.

D. The low-income schools with COP teams will achieve significantly greater gains in pupil self concepts annually than the non-COP schools.

V. MANAGEMENT AND CONTROL

The major thrust of the program at Forrest for this year was to raise the reading levels of the pupils in grades 1 - 3 by at least one grade level. However, with the initiation of the Peabody Rebus Reading Approach in one section of the first grade, it was decided to study only the

progress of the first grade pupils. Accordingly, a comparison was made between the two groups of first graders.

Description of the Experimental Approaches

A. A basal reading approach using traditional orthography (BR-TO).

B. A basal reading approach using rebuses (BR-Rebus).

The "TO" approach makes use of the standard English alphabet. The "Rebus" approach, developed at Peabody, is a two-stage approach. Pupils first learn to read a vocabulary of picture-symbols (rebuses) instead of spelled words. After the pupil gains proficiency in reading with the picture-symbols, he spells words into the text in place of the rebuses. Examples of the rebus vocabulary and an illustrative rebus passage are shown in Figure 1. A brief description of each of the two approaches is given below.

A. The basal reader approach using traditional orthography (BR-TO).

A basal reader approach is characterized by the use of a coordinated series of readers, workbooks, and teacher's manuals. Such a series provides the teacher with a complete ready-made package of instructional material for teaching reading. The Scott-Foresman series which utilizes the English alphabet was used by the BR-TO group.

B. The basal reader approach using rebuses (BR-Rebus). The unique characteristic of the approach was the use of rebuses as the first step in learning to read. Pupils develop a rather extensive rebus vocabulary soon after they begin to receive instruction in this approach. After the child develops proficiency in rebus reading, he proceeds through a transition program, gradually substituting spelled words in place of the rebuses. The "Rebus Reading Series" was developed by Richard W. Woodcock, Ed.D, University of Oregon, Research Professor in Special Education,

George Peabody College.[1] At the completion of the rebus program, the teacher moved into the primer level of the Scott-Foresman series.

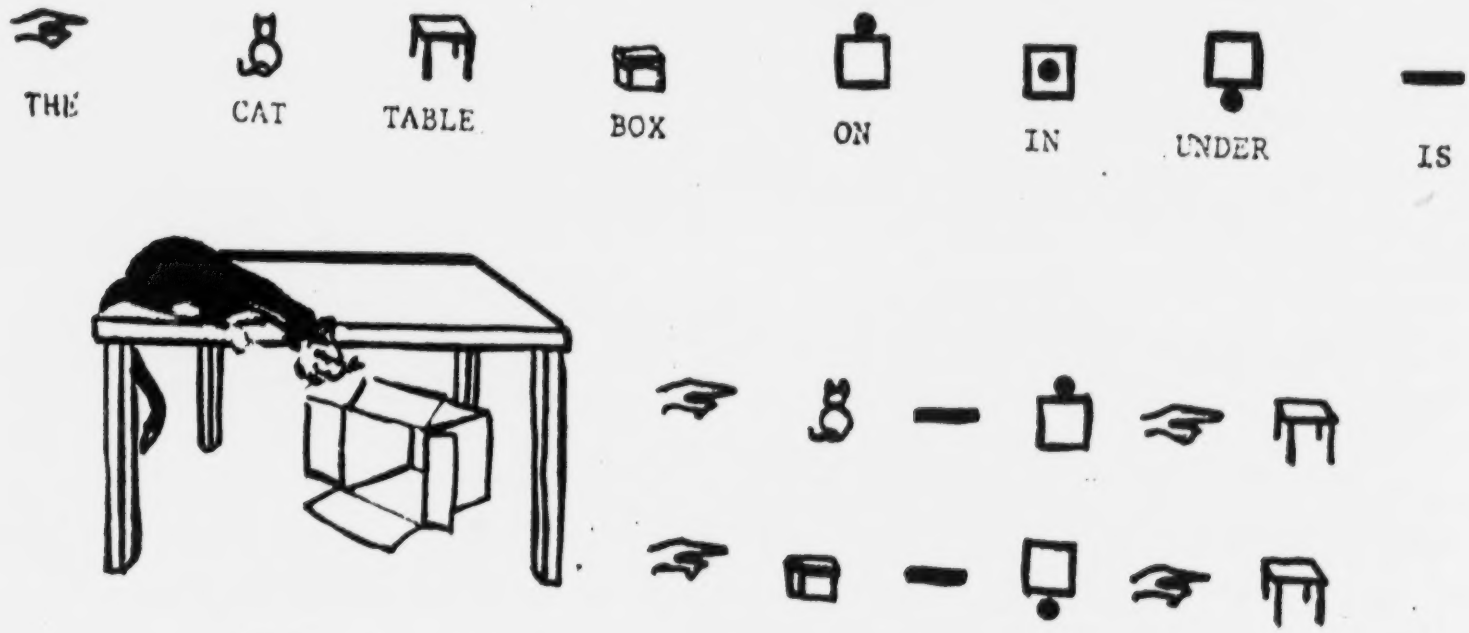

Figure 1. Illustrative rebus vocabulary and passage.

Dr. Joann Nurss, Chairman of the Department of Early Childhood Education, and Dr. David Jones, Department of Counseling and Psychological Services at Georgia State University; the principal, Mr. Randall Gay; Area III Resource Teachers, Mrs. Ann Richards and Mrs. Barbara Goodwin; and the school's Lead Teacher, Mrs. Roselle Wright, served as supportive personnel for the program. As such, they provided professional guidance in organizing and beginning the program and in providing inservice training for the staff.

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[1]Richard W. Woodcock, "The Peabody-Chicago-Detroit Reading Project — A Report of the Second-Year Results," Nashville: Institute on Mental Retardation and Intellectual Development, George Peabody College, 1967.

The lead teacher, serving as a curriculum specialist, gave guidance and assistance in constructing educational games to meet the needs of individuals and small groups of pupils. Further, the lead teacher did demonstration teaching, collected and distributed materials, and assisted teachers in diagnosing and prescribing for learning.

The lead teacher worked with teachers of all grade levels. At least one hour per week was used in meetings for presenting new materials, discussing problems, assisting teachers with diagnosing and prescribing for learning, and sharing ideas. The lead teacher did not work with all teachers simultaneously; rather, sessions were rotated among groups of teachers of each grade level, so that each grade level group met at least once monthly. Further, upon request of individual teachers, the lead teacher visited classrooms and assisted the teachers as needed.

Decision-Making Process

The faculty met at least once monthly to discuss general operational procedures and matters that were specifically related to the total school organization.

One person from each grade level was selected to serve as grade chairman. These persons served as a committee to meet with the principal and the lead teacher to discuss special problems (instructional and operational) of the program. This group met as the need arose and was charged with dissemination of information and materials among the grades.

Study of the Organizational Climate

Organizational climate has been used to describe the "personality" of the environment. Many studies may be found which support the theory

that congruence between the goals established by organization management and the individual's perception of these goals, as related to his basic psychological needs, plays a major role in determining the degree of productivity of the organization. Therefore, efforts have been made to obtain data concerning the characteristics of the school climate over a period of years, beginning with the 1970-71 school year.

Forrest was one among fourteen Title I Schools selected for the study of the organizational climate. During the latter part of the 1970-71 school year, a sample of teachers at Forrest were asked to complete, anonymously, the Organizational Climate Index (OCI) developed by George Stern of Syracuse University to assess their perception of the organizational climate at their school. The OCI is strictly not a test or a criterion measure in the judgmental or evaluative sense. It is, however, an effort to provide feedback on the school climate for analysis and discussion. Further, in sequential years attempts will be made to determine if the climate of the school influences the achievement levels of the pupils.

Description of Instrument

The OCI presents teachers with 300 statements which they are to mark true or false as applicable to their schools. After compilation, the items on the OCI provide data from the respondents on 30 of Murray's need-press scales. (See Table 1 on the next page.) Analysis of these data produces six OCI factors, which are listed below with their definitions. The first five factors describe the "development press," which is the capacity of the organization to support, satisfy, or reward self-actualizing behavior. The sixth factor describes the "control press," which refers to those characteristics of the environment which inhibit or restrict personal expressiveness.

TABLE 1

DEFINITIONS OF SCALES FROM WHICH DEVELOPMENT PRESS AND CONTROL PRESS ARE DERIVED IN THE ORGANIZATIONAL CLIMATE INDEX

1. Abasement-assurance: self-deprecation versus self-confidence
2. Achievement: striving for success through personal effort
3. Adaptability-defensiveness: acceptance of criticism versus resistance to suggestion
4. Affiliation-rejection: friendliness versus unfriendliness
5. Aggression-blame avoidance: hostility versus disorganization

6. Change-sameness: flexibility versus routine
7. Conjunctivity-disjunctivity: planfulness versus organization
8. Counteraction-inferiority avoidance: restriving after failure versus withdrawal
9. Deference-restiveness: respect for authority versus rebelliousness
10. Dominence-tolerance: ascendance versus forebearance

11. Ego Achievement: striving for power through social action
12. Emotionality-placidity: expressiveness versus restraint
13. Energy-passivity: effort versus inertia
14. Exhibitionism-inferiority avoidance: attention-seeking versus shyness
15. Fantasied achievement: daydreams of extraordinary public recognition

16. Harm avoidance — risk-taking: fearfulness versus thrill seeking
17. Humanities-social sciences: interests in the humanities and the social sciences
18. Impulsiveness-deliberation: impetuosity versus reflection
19. Narcissism: vanity
20. Nuturance-rejection: helping others versus indifference

21. Objectivity-projectivity: detachment versus superstition (AI) or suspicion (EI)
22. Order-disorder: compulsive organization of details versus carelessness
23. Play-work: pleasure-seeking versus purposefulness
24. Practicalness-impracticalness: interest in practical activities versus indifference
25. Reflectiveness: introspective contemplation

26. Science: interest in the natural sciences
27. Sensuality-puritanism: interest in sensory and aesthetic experiences
28. Sexuality-prudishness: heterosexual interests versus inhibitions of heterosexual interests
29. Supplication-autonomy: dependency versus self-reliance
30. Understanding: intellectuality

A. Development Press

1. Intellectual climate — This factor describes a concern with intellectual activity, social action, and personal effectiveness. It is based on the scales for Humanities, Social Science, Science, Reflectiveness, Understanding, Fantasied Achievement, Exhibitionism, and Change. A school that scores high on this factor is one in which the teachers feel that there is a high degree of intellectuality, heterosexual interests, flexibility, and attention seeking.

2. Achievement standards — This is the factor reflecting press for achievement. Schools high on this factor stress hard work, perseverance, and a total day-by-day commitment to institutional purposes. It is defined by counteraction, energy, achievement, emotionality, and ego achievement.

3. Practicalness — This factor suggests an environmental dimension of practicality tempered with friendliness. It is defined by practicalness and nurturance. A school that scores high on this factor is one in which the teachers feel there is a high interest in practical activity and a desire for helping others.

4. Supportiveness — This factor deals with aspects of the organizational environment that respect the integrity of the teacher as a person, but the implication is that dependency needs must be supported rather than personal autonomy emphasized. It might be considered a measure of democratic paternalism. The scales defining it are assurance, tolerance, objectivity, affiliation, conjunctivity, supplication, blame avoidance, harm avoidance, and nurturance. A school that scores high on this factor is one in which the teachers feel a high degree of self-confidence, friendliness, and planfulness.

5. Orderliness — The components of this factor are concerned with the press for organizational structure, procedure, orderliness, and a respect for authority. Conformity to community pressures and an effort to maintain a proper institutional image probably are also concomitants of a high score on this factor. It is based on order, narcissism, adaptability, conjunctivity, deference, and harm avoidance. A school that scores high on this factor is one in which the teachers feel there is a compulsive organization of details, acceptance of criticism, respect for authority, vanity and planfulness.

B. Control Press

In addition to the reflection of factors 1 and 2 above, control press involves:

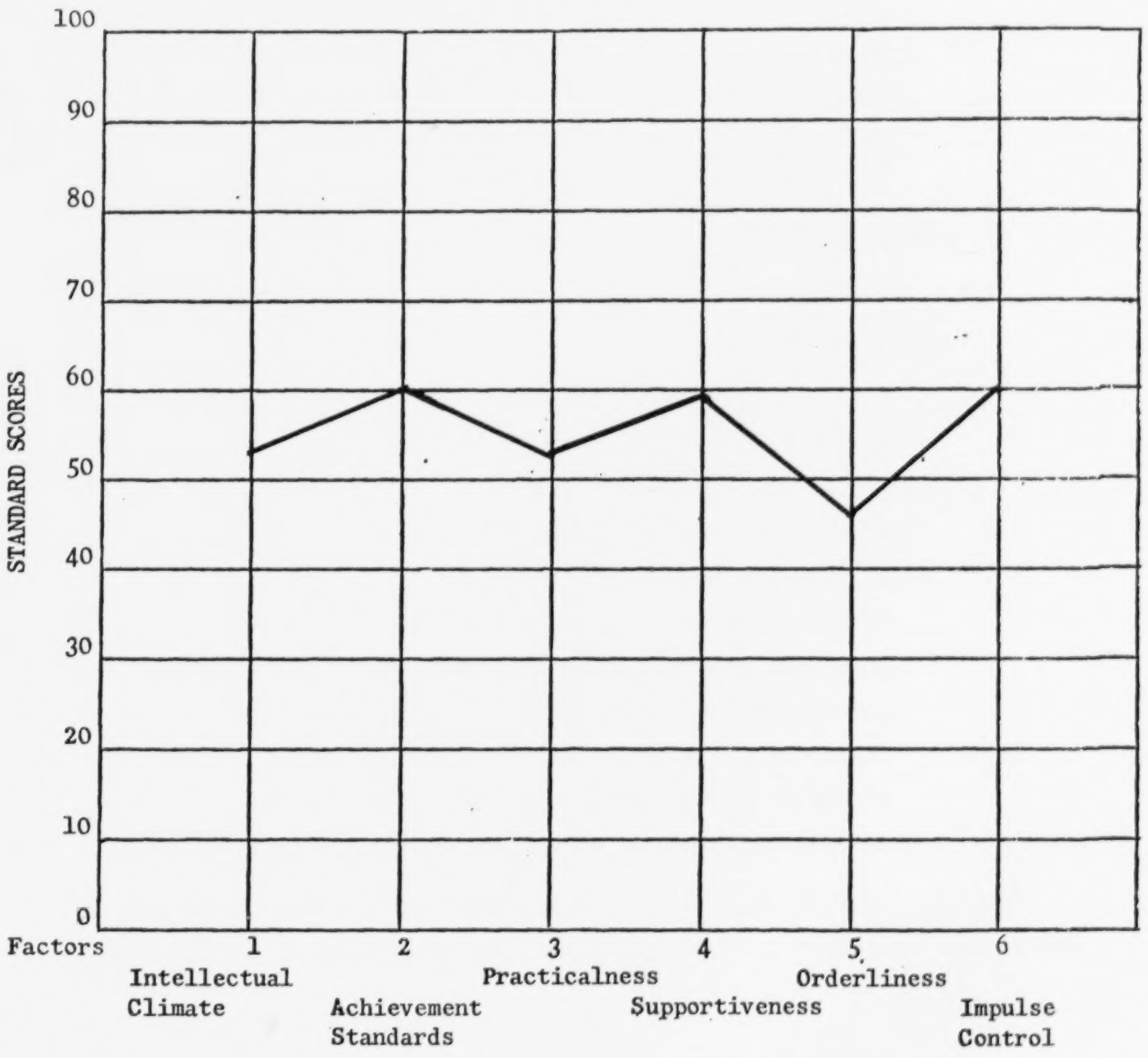
Impulse control -- This factor implies a high level of constraint and organizational restrictiveness. There is little opportunity for personal expression or for any form of impulsive behavior. It is based on work instead of play; prudishness versus sexuality; aggression versus blame avoidance; impulsiveness versus deliberation; emotionality versus placidity; and exhibitionism versus inferiority avoidance. A school that scores high on this factor is one in which the teachers feel there is a high degree of purposefulness, heterosexual interests, hostility, impetuosity, expressiveness, and restriving after failure.

Forrest's profile is presented in the table on the next page. The scores were converted to standard scores. The mean score is 50, and the standard deviation is 10.

According to the data collected on the OCI, teachers at Forrest feel that the climate is rather open on each of the factors. Among the 14

TABLE 2

SCHOOL PROFILE OF STANDARD FACTOR SCORES ON
THE ORGANIZATIONAL CLIMATE INDEX



schools included in this study, Forrest ranked 4.5 (a tie with another school for Rank 4) on intellectual climate. It ranked highest (No. 1) on achievement standards and impulse control. The rank order on other factors were 5, 4, and 9 on practicalness, supportiveness, and orderliness, respectively. The mean rank for development press was 3. Based on the definitions reported in the context of this report, these data indicate that the teachers feel that the organizational structure supports, satisfies, or rewards self-actualizing behavior. The high rank on impulse control indicates that the teachers feel free to be self-expressive.

VI. PROCESS

Pupils were tested in the City-Wide Testing Program in October, 1970, and were tested again in April, 1971. Therefore, the results presented here are based on approximately six months in the program.

Reading was taught for approximately 45 minutes daily. One educational aide was assigned to both first grade teachers at different times during the day. During the mornings the aide assisted the BR-TO group, and during the afternoons the aide assisted with the BR-Rebus group. This aide is a COP participant. As such, she is currently enrolled in accredited college courses and has received training for working with pupils in instructional tasks. The aide participated in planning, preparing materials, and working with small groups or individual pupils. Further part-time assistance was given to the teacher using the BR-Rebus group approach by two graduate students from Georgia State University. They assisted mostly with testing and preparation of materials. These graduate students worked under the direction of Dr. Nurss and Dr. Jones. They helped the teacher of the BR-Rebus group in initiating the program, testing the pupils, and preparing special materials for the program. They did not work on a daily schedule; rather, they worked with the group irregularly to give assistance when needed.

VII. EVALUATION

The Metropolitan Readiness Tests (MRT), the Metropolitan Achievement Tests (MAT), and the Student Attitude Toward School Inventory (SATSI) were used as evaluative instruments.

The MRT was administered as the pretest to all first graders in October, 1970.

The MAT, Primary I Battery, Form G, was administered as the posttest to all first graders in April, 1971.

The SATSI, developed by the Philadelphia School System's Research and Development Division, was administered to all first grade pupils in April, 1971.

On this particular inv entory, the pupil is given 18 sets of three faces (smiling, plain, and sad). Eighteen questions concerning school activities are read one at a time. For each question the pupil is asked to indicate how he feels about the question by marking the appropriate space to show his feelings. The sad face was assigned a value of 1; the face without expression was assigned a value of 2; and the happy (smiling) face was assigned a value of 3. The possible score range for each pupil was from 18 to 54, which means the higher the score, the better the attitude.

VIII. FINDINGS

In October, 1970, all first grade subjects were administered the MRT. This test did not give grade equivalents; rather, letter ratings were assigned to corresponding total scores. Table 3 on the next page shows the distribution of scores. As shown in this table, subjects who scored "C" or above are considered ready for first grade work. Twenty pupils in the BR-TO group scored "C" or above, while 18 pupils in the BR-Rebus group scored "C" or above.

TABLE 3

DISTRIBUTION OF LETTER RATING AND READINESS STATUS CORRESPONDING TO VARIOUS RANGES OF TOTAL SCORE ON THE METROPOLITAN READINESS TESTS

(FIRST GRADE)

No. Pupils		Score	Letter	Readiness	
BR-TO	BR-Rebus	Range	Rating	Status	Significance
9	0	Above 76	A	Superior	Apparently very well prepared for first-grade work. Should be given opportunity for enriched work in line with abilities indicated.
5	7	64 - 76	B	High Normal	Good prospects for success in first-grade work, provided indications, such as health, emotional factors, etc., are consistent.
6	11	45 - 63	C	Average	Likely to succeed in first-grade work. A careful study should be made of the specific strengths and weaknesses of pupils in this group and their instruction planned accordingly.
2	4	24 - 44	D	Low Normal	Likely to have difficulty in first-grade work. Should be assigned to slow section and given more individualized help.
0	0	Below 24	E	Low	Chances of difficulty high under ordinary instructional conditions. Further readiness work, assignment to slow section, or individualized work is essential.

The MAT was administered as a posttest in April, 1971. There was an interval of six months between pretest and posttest. Therefore, in order to realize the objective of one month's gain for each month in the program, it was expected that pupils who scored "C" or above on the MRT should score at least 1.6 on the MAT. Table 4 shows the number and per cent of pupils showing at least a one month gain for each month in the program. Neither of the two groups completely met the expectation that all pupils who scored "C" or above on the MRT should score at least 1.6 on the MAT. However, 12 pupils, or 54.5 per cent, of those taught by the BR-TO approach accomplished the objective; and 10 pupils, or 45.5 per cent, of those taught by the BR-Rebus approach accomplished the objective.

Table 5 shows the frequency distribution of the total reading scores on the MAT. In the BR-Rebus group, no pupil scored above 1.9. Nearly one-half (45.5%) scored from 1.6 to 1.9, and more than one-half (54.5%) scored from 1.2 to 1.5. In the BR-TO group, five pupils (22.7%) scored within the 2.0 to 2.3 range; seven pupils (31.8%) scored within the 1.6 to 1.9 range; and ten pupils (45.5%) scored within the 1.2 to 1.5 range. Those pupils who scored within the 1.2 to 1.5 range did not make a month's gain for each month in the program. However, they did make some progress according to these MAT data.

The performance of the two groups on the MAT was compared by the use of analysis of co-variance to compensate for the initial difference between the two groups. The MRT scores were used as the co-variant. According to the F-test, there was no statistically significant difference between the performance of the two groups on the MAT. (See Table 6 on page 20.)

On the SATSI the pupils in the BR-TO group scored higher than the BR-Rebus group, statistically significant at the .01 level. (See Table 7 on page 20.)

TABLE 4

NUMBER OF PUPILS SHOWING AT LEAST ONE MONTH GAIN IN READING FOR EACH MONTH IN THE PROGRAM AS MEASURED BY THE METROPOLITAN READINESS TESTS (PRETEST) AND THE METROPOLITAN ACHIEVEMENT TESTS (POSTTEST)

(FIRST GRADE)

Group		Scored "C" or Above		Scored 1.6 or Above	
		No.	Per Cent	No.	Per Cent
BR-TO	22	20	90.9	12	54.5
BR-Rebus	22	18	81.8	10	45.5

TABLE 5

FREQUENCY DISTRIBUTION OF TOTAL READING SCORES ON THE METROPOLITAN ACHIEVEMENT TESTS (POSTTEST)

(FIRST GRADE)

Grade Equivalent	BR-Rebus		BR-TO	
	No.	Per Cent	No.	Per Cent
2.0 — 2.3	—	—	5	22.7
1.6 — 1.9	10	45.5	7	31.8
1.2 — 1.5	12	54.5	10	45.5

TABLE 6

COMPARISON OF MEAN SCORES OF FIRST GRADE (REBUS VS. BASAL) ON THE METROPOLITAN READINESS TESTS (PRE) AND METROPOLITAN ACHIEVEMENT TESTS (POST)

	Treatment	Error	Total
Sum of Squares: X (Pretest)	1898.20	7826.59	9724.80
Sum of Squares: Y (Posttest)	0.42	3.04	3.46
Sum of Products	28.24	114.80	143.05
Degrees of Freedom	1.00	42.00	43.00
Adjusted Sum of Squares: Y	0.00	1.35	1.35
Degrees of Freedom for Adjusted Sum of Squares	1.00	41.00	42.00
Variance Estimates	0.00+	0.03	

F = 0.0020462
Adjusted Mean of Y1: 1.6145 (BR-Rebus).
Adjusted Mean of Y2: 1.6173 (BR-TO).

TABLE 7

COMPARISON OF MEAN SCORE RESULTS ON STUDENT ATTITUDE TOWARD SCHOOL INVENTORY

(FIRST GRADE)

Group	No.	Mean Score	t-Test
Br-Rebus	25	42	4.35**
BR-TO	25	49	

**Significant at the .01 level.

Further, MAT data for grade two are reported for information. (See Tables 8 — 10.) These data show the frequency analysis of total reading gain, the correlation between MAT subtest scores and attendance, and the comparison of MAT subtest scores of pupils who took only the pretest with the subtest scores of pupils who took both pretest and posttest, and the comparison of MAT subtest scores of pupils who took only the posttest with the subtest scores of pupils who took both pretest and posttest.

According to these data, after six months in the program one pupil (1.6%) lost one month or more; ten pupils (16.0%) made no gain or loss; 32 pupils (50.8%) gained four months or less; and 20 pupils (31.9%) approximated or exceeded the expected gain of one month for each month in the program. (See Table 8 on the next page.)

The attendance figure for those pupils who took both pretest and posttest was 94 per cent for the 188-day period between October 7, 1970, and April 14, 1971. This period included 116 possible days for pupils to attend, plus 72 legitimate holidays, including weekends. The attendance figure for the total second grade was 91 per cent over a 180-school-day period. Correlations were run between pretest, posttest, and gain scores on each of the subtests and the per cent of attendance for those pupils who took both pretest and posttest. The data revealed a very slight linear correlation; however, it was only between the pretest scores in word knowledge, reading, and total reading that the correlations with attendance were statistically significant at the .05 level. (See Table 9 on page 23.)

A comparison was made between the pretest subtest scores on the MAT of the pupils who took only the pretest and the pretest subtest scores of the pupils who took both pretest and posttest. There was no statistically significant difference between the scores of the two groups. The posttest subtest scores of the pupils who took only the posttest were compared with the posttest scores of those who took both pretest and posttest. There was no statistically significant difference between the scores of the two groups. (See Table 10 on page 24.)

TABLE 8

FREQUENCY ANALYSIS OF TOTAL READING GAIN
ON METROPOLITAN ACHIEVEMENT TESTS*

(SECOND GRADE)
N = 63

Number	Per Cent	Gain (in Months)
1	1.6	-2 - -1
10	16.0	0
14	22.2	1 - 2
18	28.6	3 - 4
7	11.1	5 - 6
4	6.4	7 - 8
3	4.8	9 - 10
3	4.8	11 - 12
1	1.6	13 - 14
1	1.6	15 - 16
0	0.0	17 - 18
0	0.0	19 - 20
0	0.0	21 - 22
0	0.0	23 - 24
1	1.6	25 - 26

*There was a period of six months between pretest and posttest.

TABLE 9

CORRELATION BETWEEN METROPOLITAN ACHIEVEMENT TESTS SUBTEST SCORES (PRETEST AND POSTTEST) AND ATTENDANCE (SECOND GRADE)

	Coefficients of Correlation			t-Ratio		
	Pretest	Posttest	Gain	Pretest	Posttest	Gain
Word Knowledge vs. Attendance	.24	.21	.13	1.95*	1.65	1.00
Word Analysis vs. Attendance	.13	.19	.17	1.05	1.48	1.37
Reading vs. Attendance	.27	.17	.07	2.19*	1.31	0.60
Total Reading vs. Attendance	.27	.20	.13	2.19*	1.61	1.01
Mathematics vs. Attendance	.17	.19	.18	1.34	1.52	1.44

*Significant at the .05 level.

TABLE 10

COMPARISON OF METROPOLITAN ACHIEVEMENT TESTS SUBTEST SCORES
OF PUPILS TAKING PRETEST OR POSTTEST ONLY
WITH SUBTEST SCORES OF PUPILS TAKING BOTH PRETEST AND POSTTEST

(SECOND GRADE)

Subtest	Pretest Only			Pretest/Posttest			t-Score	Posttest Only			Pretest/Posttest			t-Score
	No.	Mean	S.D.	No.	Mean	S.D.		No.	Mean	S.D.	No.	Mean	S. D.	
Word Knowledge	12	1.52	0.5	63	1.49	0.3	0.4	11	1.95	0.8	63	2.03	0.7	-0.3
Word Analysis	12	1.50	0.4	63	1.45	0.4	0.5	11	1.66	0.6	63	1.88	0.7	-1.0
Reading	13	1.80	0.4	62	1.58	0.3	1.4	11	1.94	0.7	62	1.96	0.8	-0.1
Total Reading	12	1.71	0.7	63	1.56	0.3	1.2	11	1.95	0.7	63	1.98	0.7	-0.1
Mathematics	12	1.38	0.6	63	1.39	0.3	-0.1	11	1.93	0.8	63	2.01	0.8	-0.3

Table 11 on the following page presents the overall reading performance of each grade (1 - 5) on pretest and posttest. These data show the number of pupils who took both pretest and posttest, the mean pretest and posttest scores, the amount of gain, the per cent of expected gain made, the gain score t-test, the per cent of attendance, and the coefficient of correlation between attendance and reading gain score.

These data show that, as a grade, the first grade pupils performed as expected. The average pretest score was B, which indicated that the pupils were ready for the first grade. The posttest mean score was the expected 1.6. The average gain for the second and third grades was not as much as the expected gain of six months. The second grade made a four-month gain (66% of the expected gain), and the third grade made a five-month gain (84% of the expected gain). The fourth grade made a tremendous amount of gain (8 months, 124% of the expected gain). The fifth grade made a gain of two months (37% of the expected gain).

The gain for each grade, except the fifth, was statistically significant at the .001 level. The gain made in the fifth grade was not statistically significant.

Findings regarding the COP objectives were as follows:

A. There were two COP teams in Forrest. One was assigned to the first grade and the other to the third grade. Pupils in the first grade gained approximately six months in reading, and pupils in the third grade gained approximately five months. It should be noted that the COP objective calls for more than one grade level (10 months) annually. Neither group completely met the objective; however, each made significant gains.

B. The COP aides assigned to grades one and three worked with all pupils in those grades; therefore, no comparisons could be made between the pupils in either grade. For the purposes of COP,

TABLE 11

COMPARISON OF MEAN READING PRETEST/POSTTEST SCORES, GAIN, PER CENT OF EXPECTED GAIN, GAIN SCORE t-TEST, PER CENT OF ATTENDANCE AND COEFFICIENT OF CORRELATION BETWEEN ATTENDANCE VS. READING

Grade	Number of Pupils	Mean Score Pre	Mean Score Post	Gain in Months	Per Cent of Expected Gain	t-Test	Per Cent of Attendance	r
1	44	B	1.62	—	———	----	——	---
2	63	1.56	1.98	4	66	7.22***	94	0.13
3	56	1.96	2.48	5	84	7.71***	94	0.25
4	47	2.64	3.41	8	124	7.94***	95	0.11
5	56	3.86	4.09	2	37	1.95	97	0.09

***Significant at the .001 level

the gains of the first and third grade pupils at Forrest will be compared to the gains of pupils in other similar schools not taught by COP teams.

The organizational climate was assessed for baseline data, and comparisons will be made at the end of another year. It should be noted that Forrest ranked very high in openness as reported in the section on Management and Control.

Data concerning pupils' self-concept will be gathered for longitudinal purposes.

IX. COST EFFECTIVENESS

Cost analysis of reading gains was done to determine the relative cost for the amount of gain made in each grade. These data are presented in Table 12. These data show the total school (K—7) average daily attendance (ADA), the ADA by grade, and the ADA for the pretest/posttest population for which gains are computed.

The sixth and seventh grades were transferred to a middle school in March; therefore, these grades are not included in the cost analysis. The first grade was divided into two groups for reading; therefore, the cost analysis was done accordingly.

In order to make an approximate analysis, expenditures were separated into two sections: (1) general funds, salary and non-salary; and (2) special funds, salary and non-salary. These expenditures do not include cost for food services, new equipment, or capital outlay. These figures were taken from the June 30, 1971, General Funds Financial Report and the June 30, 1971, Trust and Agency Report. The per pupil costs are not exact or finite; rather, broad estimates were made based upon information obtained from the school staff relative to the utilization of resources.

In order to appropriate general funds for each grade's pre/post population, the per cent of each grade's pre/post ADA of the total

TABLE 12

COST ANALYSIS OF READING GAINS BY GRADES
TOTAL SCHOOL AVERAGE DAILY ATTENDANCE (ADA)
K-7 — N = 419

	Grades							
	First							
	Rebus	Basal	Total	Second	Third	Fourth	Fifth	TOTAL
ADA for Grade	—	—	48	69	59	58	60	294
ADA Pre/Post Population	20	20	40	56	57	44	59	256
Per Cent of Total Population	—	—	9.0	13.0	13.0	10.0	14.0	59.0
Expenditures - Pre/Post Population								
A. General Funds								
1. Regular								
a. Salary	$12,671	$12,671	$25,342	$36,604	$36,604	$28,157	$39,419	$166,126
b. Non-salary	1,371	1,125	2,400	3,606	3,606	2,774	3,884	16,366
2. CIP								
Salary	$ 54	$ 54	$ 108	$ 158	$ 158	$ 120	$ 168	$ 712
3. Total General Funds								
a. Salary	$12,725	$12,725	$25,450	$36,762	$36,762	$28,277	$39,587	$166,838
b. Non-salary	1,371	1,125	2,496	3,606	3,606	2,774	3,884	16,366
c. TOTAL GENERAL FUNDS	$14,096	$13,850	$27,946	$40,368	$40,368	$31,051	$43,471	$183,204
B. Special Funds								
1. Title I								
a. Salary								
(1) Lead Teacher	$ 490	$ 490	$ 980	$ 1,415	$ 1,415	$ 1,089	$ 1,523	$ 6,422
(2) Counselor	445	445	890	1,286	1,286	989	1,385	5,836
(3) Aides	2,647	1,996	4,643	4,643	4,643	-0-	-0-	13,929
b. Non-salary	12	12	24	33	33	525	35	650
c. TOTAL TITLE I	$ 3,594	$ 2,943	$ 6,537	$ 7,377	$ 7,377	$ 2,603	$ 2,943	$ 26,837
2. COP								
Salary	$ 342	$ 258	$ 600	$ -0-	$ 600	$ -0-	-0-	1,200
3. Total Special Funds								
a. Salary	$ 3,924	$ 3,189	$ 7,113	$ 7,344	$ 7,944	$ 2,078	$ 2,908	$ 27,387
b. Non-salary	12	12	12	24	33	525	35	650
c. TOTAL SPECIAL FUNDS	$ 3,936	$ 3,201	$ 7,137	$ 7,377	$ 7,977	$ 2,603	$ 2,943	$ 28,037

TABLE 12 (Cont'd.)

	Grades							
	First							
	Rebus	Basal	Total	Second	Third	Fourth	Fifth	TOTAL
Total Expenditures - Pre/Post Population								
1. Salaries	$16,649	$15,914	$32,563	$44,106	$44,706	$30,355	$43,495	$194,225
2. Non-salary	1,383	1,137	2,520	3,639	3,639	3,299	3,919	17,016
3. TOTAL EXPENDITURES - PRE/POST POPULATION	$18,032	$17,051	$35,083	$47,745	$48,345	$33,654	$46,414	$211,241
Cost per Pre/Post Pupil								Overall Average
1. General Funds								
a. Salary	$ 636	$ 636	$ 636	$ 656	$ 645	$ 643	$ 671	$ 650
b. Non-salary	69	56	62	64	63	63	66	64
c. TOTAL GENERAL FUNDS	$ 705	$ 692	$ 698	$ 720	$ 708	$ 706	$ 737	$ 714
2. Special Funds								
a. Salary	$ 196	$ 159	$ 177	$ 131	$ 139	$ 47	$ 49	$ 107
b. Non-salary	1	1	1	1	1	12	1	3
c. TOTAL SPECIAL FUNDS	$ 197	$ 160	$ 178	$ 132	$ 140	$ 59	$ 50	$ 110
3. Total Expenditures - Pre/Post Pupil								
a. Salaries	$ 832	$ 795	$ 813	$ 787	$ 784	$ 690	$ 720	$ 759
b. Non-salary	70	57	63	65	64	75	67	67
c. TOTAL EXPENDITURES - PRE/POST PUPIL	$ 902	$ 852	$ 876	$ 852	$ 848	$ 765	$ 787	$ 826
Rate of Reading Gain (Per Cent)	98	98	98	66	84	124	37	78
Ending Reading Level (Grade)	1.62	1.62	1.62	1.98	2.48	3.41	4.09	
Projected Cost for One-Grade-Unit of Gain								
1. General Funds	$ 719	$ 706	$ 712	$ 1,091	$ 843	$ 569	$ 1,992	$ 918
2. Special Funds	201	163	182	200	167	48	135	141
3. TOTAL PROJECTED COST FOR ONE-GRADE-UNIT OF GAIN	$ 920	$ 869	$ 894	$ 1,291	$ 1,010	$ 617	$ 2,127	$ 1,059

population was taken, and the salaries from general funds were appropriated accordingly. The funds for non-salary, which included the cost for materials and supplies and replacement and/or repair of old equipment, were appropriated likewise. In the first grade, the additional cost for rebus materials was allocated to the rebus group.

During the summer of 1970 the principal and the lead teacher attended the CIP workshop and the remuneration which they received was appropriated among the grades according to the pre/post population.

Two special projects (Title I and COP) were used as sources of funds and are reported. The lead teacher and the counselor were available to all grades and provided services almost equally across grades. Their salaries were prorated according to the pre/post ADA of each grade.

COP as a training program contributed an average of $600 per trainee for one academic year. The trainee who worked with the first grade gave 53 per cent of her time to the rebus group and 47 per cent of her time to the basal group. The other COP trainee worked with the third grade. The COP funds, which were paid to the participating institution of higher education, are reported in the first and third grades and are totaled under salary.

It should be noted that an additional $500 was used for instructional materials in the fourth grade under special funds, non-salary. This money was used to purchase Sullivan materials to be used with a group of slow learners in the fourth grade. The pupils in the fourth grade were grouped for reading. One teacher took those pupils who were very slow and gave intensive reading instruction to them using the Sullivan materials.

These data show the approximate per pupil cost as paid by general funds and special funds, then total expenditures by salary and non-salary. Further, the rate of reading gain and the cost for that gain are given for each grade. According to these data, the approximate cost per pupil in the first grade was $876. It should be noted, however,

that due to the additional materials needed for the BR-Rebus method and the additional time the aide spent with the group, the per pupil cost for the rebus group was $902, compared to $852 for the BR-TO group, and both groups gained at the same rate (98% of the expected gain). The per pupil cost was $852 for the second grade to make 66 per cent of the expected gain; $848 for the third grade to make 84 per cent of the expected gain; $765 per pupil for the fourth grade to make 124 per cent of the expected gain; $787 per pupil for the fifth grade to make 37 per cent of the expected gain; and an overall average of $826 per pupil to make 78 per cent of the gain. Based upon these figures, and the present rates of gain, an attempt was made to project the per pupil cost for a one-grade-unit (ten months) of gain. According to the data the cost for a one-grade-unit of gain was $894 in the first grade; $1,291 in the second grade; $1,010 in the third grade; $617 in the fourth grade; $2,127 in the fifth grade; and an overall average of $1,059 per pupil.

It should be noted that based upon the posttest data, the first grade was reading at grade level; the second grade was nearly six months behind actual grade placement; the third grade was nearly one grade level behind; the fourth grade, despite its tremendous rate of gain, was more than one grade level behind; and the fifth grade was more than one grade level behind at the end of the treatment period.

X. COMMUNICATION AND DISSEMINATION

Conferences were held with the lead teacher and/or the principal. A prospectus was developed and submitted for review by the principal and his staff. Periodic visits were made by the research assistant to the school for the purpose of gathering information.

The final school report will be submitted to the school and the area office for review and then will be circulated throughout the school system.

XI. CONCLUSIONS

The results of the study conducted at Forrest seemingly indicate that the BR-Rebus method was not superior to the BR-TO method. The BR-TO group outperformed the BR-Rebus group on both pretest and posttest. However, when the initial difference was adjusted by using analysis of co-variance, the two groups performed alike. The adjusted posttest mean score for each group was 1.6.

The data collected on the SATSI showed that the first grade pupils had a positive attitude toward school. No pretest/posttest design was used to collect these data. Therefore, it is recommended that these data be used as baseline data for comparison in further study.

No specific data were collected to determine whether pupils had developed or improved their skills in group interaction and socialization. It is recommended that attention be given to this area in future reports.

There were indications in general that attendance did not affect achievement.

The mobility index at Forrest for the school year 1970-71 was very high; however, the chief reason for the increase was the opening of Walden Middle School and the transfer of the sixth and seventh grade pupils from Forrest to Walden. Mobility did not, in the other grades, significantly affect achievement.

Even though the second grade pupils made less than the expected gain, the grade as a whole made an average gain in reading that was statistically significant at the .001 level. The difference between pre/post reading scores of the total third grade was statistically significant at the .001 level.

The fourth grade made more than the expected gain. The data on the fourth grade are being analyzed to determine whether the group using the Sullivan materials made any fantastic gain which might account for the total group's

high rate of gain. The difference between pre/post scores of the fourth grade was statistically significant at the .001 level.

The fifth grade made no significant gain.

The direct contribution of CIP to the instructional program was mainly in the form of directing systematic diagnosis of reading in grades one through three. These diagnostic procedures were a part of a system-wide effort to identify strengths and weaknesses in reading skills.

Efforts are being made to determine if there is any significant correlation between achievement and organizational climate. The data obtained thus far indicate that Forrest is rather open, wholesome, and promotes expression of ideas and interaction among staff members. Inasmuch as the scores at Forrest on the OCI were among the highest of the group of schools studied, and since Forrest ceased to be a Title I School after June 30, 1971, particular effort should be made to study the effects of the climate on achievement. A longitudinal study whould reveal whether or not the climate at Forrest is unique.

The cost effectiveness index by grades ranges from a low of $617 in the fourth grade for pupils to make a one-unit gain, to a high of $2,127 in the fifth grade, with an average of $1,059 for all grades, because the index was similar in the first three grades. Further, the index indicates a rate of effectiveness in pupil performance, based on reading, of 78 per cent.

XII. RECOMMENDATIONS

It is recommended that careful consideration be given to the beginning performance of pupils in all grades to determine if the beginning levels are commensurate to the past year's ending levels.

It is also recommended that efforts be made to determine (1) what factors contributed to the low rate of gain in the fifth grade of 1970-71, and (2) whether

these factors were pupil-related and were eliminated with the promotion of the grade or whether the factors were of an instructional nature and are still present within the school.

It is further recommended that special attention be given to identifying the factors which contributed to the high rate of gain made by the fourth grade. Special attention should be given to the present fifth grade so that the pupils might continue to gain at the rapid rate which was achieved in the fourth grade.

In general, most of the objectives pursued were accomplished by the staff at Forrest. There were some noticeable exceptions. However, it seems that the administrative and instructional climate at Forrest is based on designing an instructional program according to the strengths and weaknesses of the pupils and that the staff desires to find new ways of remediation as well as of presenting new approaches. This has been a joint effort of staff members, both administrative and instructional. Even though Forrest ceased to be a Title I School, the staff should intensify its efforts to improve the instructional program and to approach 100 per cent of effectiveness.